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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,926	01/16/2002	Jeffrey R. Sampson	2003309-0027 (Agilent 10	1042

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AGILENT TECHNOLOGIES, INC.
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EXAMINER	
TUNG, JOYCE	
ART UNIT	PAPER NUMBER
1637	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/052,926	SAMPSON, JEFFREY R.	
	Examiner	Art Unit	
	Joyce Tung	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35,67-101 and 144-149* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35,67-101 and 144-149* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The applicant's response filed 10/31/06 to the Office action has been entered. Claims 1-35, 67-101 and 144-149 are pending.

1. The rejection of claims 1-34, 67-100 and 144-147 under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Sampson et al. (US 2004/0086880 A1, issued May 6, 2004) and the rejection of claims 35 and 101 under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Sampson et al. (US 2004/0086880 A1, issued May 6, 2004) as applied to claims 1-34, 67-100 and 144-147 above, and further in view of Thorp et al. (5,871,918, issued Feb. 16, 1999) are withdrawn because of the argument.

NEW GROUNDS OF REJECTIONS

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-33, 67-76, 78-100 and 148-149 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Brockhurst et al. (2003/0104376, issued Jun. 5, 2003).

Baldarelli et al. disclose a method for sequencing nucleic acid polymers. The description of the method of Baldarelli et al. as listed in claims 1-24 (See Abstract and column 23-24, claims 1-24). Modified bases are available including methylated bases (See column 8, lines 44-45). In

order to identify the monomers, conditions should be appropriate to avoid secondary structure in the polymer to be sequenced (See column 8, lines 53-54). Baldarelli et al. also disclose sequencing two different oligonucleotide homopolymers (See column 21, lines 55-67). The oligonucleotide homopolymers are interpreted as the sequence with at least one repeat of a nucleotide sequence.

Baldarelli et al. do not disclose the nucleic acid molecule containing modified nucleotides that reduce secondary structure in the nucleic acid molecule, which are modified adenosine, modified thymine, modified guanosine and modified cytosine and the nucleic acid which is enzymaticaly produced by using a circular template.

Brockhurst et al. disclose a method of identifying or detecting a nucleic acid repeat region (See [0012]). A single stranded nucleic acid template is amplified with the repeat region (See [0012] and [0016]). The method used for amplification is rolling circle amplification ([0039]). Nucleotides used in either DNA or RNA include modified bases capable of base paring with one of the conventional bases, adenine, cytosine, guanine, thymine and uracil. Such modified bases includes inosine (See [0051]).

One of ordinary skill in the art would have been motivated to apply the modified base in the method of Baldarelli et al. for sequencing a nucleic acid molecule as taught by Brockhurst et al. because by doing so the method of Brockhurst et al. is more efficient for analyzing nucleotide repeat regions (See pg. [0007]). The method of Brockhurst et al. also is practiced on single stranded template from a non-amplified nucleic acid molecule in which the template is subjected to PCR-rolling circle amplification (See pg. [0039]). It would have been prima facie obvious to

produce the nucleic acid with circular template and apply the modified base in the method of Baldarelli et al. for sequencing a nucleic acid molecule.

4. Claims 34, 77 and 144-147 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Brockhurst et al. (2003/0104376, issued Jun. 5, 2003) as applied to claims 1-33, 67-76, 78-100 and 148-149 above, and further in view of Dellinger et al.(6,693,187, issued Feb. 17, 2004).

The teachings of Baldarelli et al. and Brockhurst et al. are set forth in section 3 above. None of the references above discloses the modified base as recited in claims 34, 77 and 144-147.

Dellinger et al disclose oligonucleotide synthesis with phosphinoamidite carboxylates and analogs thereof having reduced internucleotide charge (See column 1, lines 8-16). The nucleobase can be 2'-thiothymidine (See column 22, lines 44-67). The synthesized oligonucleotide is used in nucleic acid sequencing (See column 44, lines 15-29).

One of ordinary skill in the art would have been motivated to apply the synthesized oligonucleotide with the modified base as taught by Dellinger et al. in the method of Baldarelli et al. for sequencing a nucleic acid molecule because the synthesized oligonucleotide of Dellinger et al. has the feature of reducing internucleotide charge (See column 1, lines 8-16). It would have been prima facie obvious to apply the nucleic acid with the base modification, such as 2'-thiothymidine for sequencing a nucleic acid molecule.

5. Claims 35 and 101are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Brockhurst et al. (2003/0104376,

issued Jun. 5, 2003) as applied to claims 1-33, 67-76, 78-100 and 148-149 above, and further in view of Thorp et al. (5,871,918, issued Feb. 16, 1999).

The references of Baldarelli et al. and Brockhurst et al. set forth in section 3 above do not disclose analyzing nucleic acid by electron tunneling.

Thorp et al. disclose a method of detecting a nucleic acid by using electron tunneling (See column 9, lines 30-55). The method may be used in a variety of applications, including DNA sequencing (See the Abstract).

One of ordinary skill in the art would have been motivated to modify the method of Baldarelli et al. by applying electron tunneling as taught by Thorp et al. since the electron tunneling is applied to DNA sequencing. It would have been prima facie obvious to apply the electron tunneling to the method of Baldarelli et al. to make the instant invention for sequencing DNA.

Summary

6. No claims are allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (571) 272-0790. The examiner can normally be reached on Monday - Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joyce Tung
January 19, 2007

KENNETH R. HORLICK, PH.D
PRIMARY EXAMINER

1/22/07